

Remarks

The above Amendments and these Remarks are in reply to the Office Action mailed October 21, 2004. The fee for addition of new claims is included herewith. A Petition for Extension of Time is also submitted herewith, together with the appropriate fee.

I. Summary of Examiners Rejections

Prior to the Office Action mailed October 21, 2004, Claims 1-27 were pending in the Application. In the Office Action mailed October 21, 2004, Claims 1-27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Purcell (U.S. Publication No. 2001/0013038 A1) in view of Hughes et al. (hereinafter Hughes, U.S. Publication No. 2003/0195876 A1).

II. Summary of Applicants' Amendment

The present Response amends Claims 1-6, 8, and 17-24; and adds new Claims 28-29, leaving for the Examiner's present consideration Claims 1-29. Reconsideration of the Application, as amended, is respectfully requested. Applicant reserves the right to prosecute any originally presented or canceled claims in a continuing or future application.

III. Claim Rejections under 35 U.S.C. § 103(a)

In the Office Action mailed October 21, 2004, Claim 1 was rejected under 35 U.S.C. 103(a) as being unpatentable over Purcell (U.S. Publication No. 2001/0013038 A1) in view of Hughes et al. (hereinafter Hughes, U.S. Publication No. 2003/0195876 A1).

Claim 1

Claim 1 has been amended by the current Response to more clearly define the embodiment of the invention therein. As amended, Claim 1 currently defines:

1. *(Currently Amended) A system for session-based retrieval at a client system of string-based content from a server system, comprising:*

a communication protocol that provides an asynchronous session-based connection between a client system and a server system, and allows the client system to send, within a single session, a plurality of query strings to query the server system for content, and to receive, within the same session, matching server content;

a client object, in communication with a client software at the client system, wherein the client object is adapted to transmit to a server object, within a single session, a plurality of queries to retrieve content from a server system, wherein each of said plurality of queries comprises a query string, and wherein each subsequent one of the plurality of queries extends the original query string by one or more additional characters; and,

a server object, in communication with a server software at said server system, said server object furthermore in communication with the client object via the communication protocol, wherein the server object records each of the plurality of queries received from the client object during the session, and in response to receiving each subsequent character, matches the extending query string against the server content and immediately returns increasingly focused content information to the client object for use by the client system.

Claim 1, as currently amended, defines a system for retrieval of string-based content, comprising a communication protocol that provides an asynchronous session-based connection between a client system and a server system. The client is capable of transmitting to a server a plurality of queries, within the same session, wherein each of said plurality of queries comprises a query string, and wherein each subsequent one of the plurality of queries extends the original query string by one or more additional characters. The server records each of the plurality of queries received from the client object during the session, and in response to receiving each subsequent character, matches the extending query string against the server content and immediately returns increasingly focused content information to the client object for use by the client system.

As described in the Background of the present Specification, traditional Internet-based servers present their data to the client using the Hyper Text Transfer Protocol (HTTP) or equivalent protocols. These protocols are inherently "session-less", i.e. no session is maintained between the client and the server. When using these protocols the server only checks the validity of the client or user input against its server content after the user has submitted the HTTP request. In practical usage, when a user is entering data into a Web-based form, then an HTTP or session-less system

will only check the validity of that form data against its server content after the user has submitted the entire input form (i.e. has made an HTTP request with the form data). One disadvantage of this method is that there is no way for the server to automatically update the client display if a portion of the server data changes while the user is entering data into the form. However, because HTTP connections are session-less, they require little or no processing power on the server while the user is entering data, and so have been commonly used in Internet business applications.

The present invention provides a method of providing a more reliable and functional Internet-based application. Unlike the traditional HTTP protocol, a session is maintained between the client and the server using an asynchronous session-based communications protocol. Since a session is maintained between the client and the server, the server can immediately check the validity of the client or user input against the server content as the user is entering a portion of a search string. Unlike HTTP or another session-less protocols, the server does not have to wait until the user submits an entire input form. In accordance with one embodiment the client is capable of transmitting to a server a plurality of queries, (an extending query). Each subsequent one of the plurality of queries extends the original query string by one or more additional characters. In response to receiving each subsequent character, the server matches the extending query string against its content and immediately (i.e. without waiting for the user to click "submit") returns increasingly focused content information to the client object for use by the client system. Since the information presented to the client is immediately updated during the session, this technique offers greater reliability and functionality than traditional techniques. An additional advantage is that, if a portion of the server content changes during the session, as the client sends subsequent queries the server automatically updates the client display to reflect those changes to the server content.

Purcell discloses a technique for providing a universal query for multiple different databases, that allows a client in a client/server computing environment to query a plurality of databases for desired data utilizing a single query sent over a network one time. (Abstract). More particularly, Purcell describes a technique for creating a single query from a user's software program or application which is compatible with all of the databases accessible from the application that will query all such databases for data designated in the query from only a single sending of the query.

(Page 1, paragraph [0002]). Preferably the request generated by the client is an SQL query which includes the names of a target database and a table in the target database containing the desired data. The servers which receive the single database query are listening to a predefined socket port over the network. (Page 1, paragraph [0011]). The client sends the SQL query out over the network via the designated socket to all of the servers which are "listening in" to the designated socket port. (Page 3, paragraph [0034]). A cap application resident at each server then generates an object which it will populate depending on what it determines relative to the query. The name or identity of the database is added to the object and the object returned to the client via the network. (Page 3, paragraph [0035]). Preferably the client creates a record of the responses it receives. This record-keeping process becomes important if no response having the desired data is received by the client within a reasonable period of time. (Page 3, paragraphs [0036] - [0037]).

It appears from the above description that, in Purcell, the primary goal is to allow a single query from a client to be simultaneously applied against multiple databases in a network. The system disclosed therein provides that any of the multiple databases that cannot service the specific client query return an empty result (indicating for example "sorry, I can't fulfill that request") The system then allows another database in the network that can fulfill the request to return the requested data.

However, in the embodiment of the invention defined by Claim 1, a client is capable of transmitting to a single server a plurality of queries, within the same session, i.e. within the session that is maintained between that client and that single server. Applicant respectfully submits that Purcell fails to teach such a session-based environment. Indeed, in teaching that "the servers which receive the single database query are listening to a predefined socket port over the network", and "the client sends the query out over the network [] to all of the servers which are "listening in" to the designated socket port," Purcell appears to teach away from the concept of maintaining a session between a client and a server. In Purcell, it appears more advantageous to have a network-wide dispersal of the queries, so as to maximize the chances that at least one of the servers can provide the desired data, rather than to have those queries contained within a single session between a single client and a single server.

Furthermore, in the embodiment of the invention defined by Claim 1, a client is capable of transmitting to a server object a plurality of queries, within the same session, wherein each of said plurality of queries comprises a single string character, and wherein each subsequent of said plurality of queries extends the query string. Applicant respectfully submits that Purcell fails to teach that a plurality of queries may be applied to a server. Purcell appears to be concerned instead with responding to a single query from a user's software program or application which is compatible with all of the databases accessible from the application and that will query all such databases for data designated in the query from the single sending of the query. This appears to conform with Purcell's goal of allowing access to multiple non-homogenous databases utilizing a single database query sent once from the client.

Furthermore, in the embodiment of the invention defined by Claim 1, said server object records, during the session, each of said plurality of queries, and in response to receiving each single string character, matches the extending query string and returns increasingly appropriate content information to the client object as the query string is being extended. As with the description above regarding the plurality of queries, Applicant respectfully submits that Purcell similarly fails to teach that the server returns increasingly appropriate content information to the client object. Indeed, as described in Purcell, if a server does not have the desired data, then no response at all is sent by the server (received by the client).

Hughes discloses an information storage, retrieval and delivery system and method operable with a computer network. Hughes is cited for the concept of storing query records within a database, and by analogy recording each of a plurality of queries. However, it appears that, in Hughes, the data is reposed in a central database, indexed and interrelated by attributes characteristic of the data type, much like a traditional database. Conversely, in the embodiment of the invention defined by Claim 1, the server object records, during the session, each of the plurality of queries, and in response to receiving each single string character, matches the extending query string and returns increasingly appropriate content information to the client. In this manner, the server object keeps the queries in memory so that when the results are returned from the content source they are matched to that query and the corresponding client, and sent back to the client

system if the query results are still relevant. However, unlike Hughes, the embodiment defined by Claim 1 does not actually store the query records in a database, nor does it perform any processing on those records.

In view of the above comments, Applicant respectfully submits that Claim 1 is neither anticipated by, nor obvious in view of the cited references, and reconsideration thereof is respectfully requested.

Claim 2

Claim 2 depends from Claim 1 and further comprises that said first and said second computers are connected via a network protocol that includes said (session-based) communication protocol. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose an asynchronous session-based communication protocol. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 2 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 3

Claim 3 depends from Claim 1 and further comprises that said server software and said client software runs on the same computer that includes said (session-based) communication protocol within said computer. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose an asynchronous session-based communication protocol. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 3 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 4

Claim 4 depends from Claim 1 and further comprises that client queries received during the session are distributed over said separate servers. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose an asynchronous session-based communication protocol. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 4 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 5

Claim 5 depends from Claim 1 and further comprises that said server software stores previously used strings and returns said stored strings to the client in response to new client queries received during the session. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose an asynchronous session-based communication protocol. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 5 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 6

Claim 6 depends from Claim 1 and further comprises a visual interface to an operator of an asynchronous session and the availability of increasingly focused content information. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose an asynchronous session-based communication protocol. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 6 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 7

Claim 7 depends from Claim 1 and further comprises that said client software is used as a content engine for another software system (to provide the other software system with asynchronous session-based information). Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose an asynchronous session-based communication protocol. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 7 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 8

Claim 8 depends from Claim 1 and further comprises that said client software accumulates a plurality of said single character queries as they are entered into the client, before sending them together to said server software as a single query string. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose a session-based communication protocol that allows a plurality of said single character queries to be accumulated as they are entered into the client, before sending them together to said server software as a single query string. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 8 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 9

Claim 9 depends from Claim 1 and further comprises that said client software stores previously received responses and uses these as the response to a new query by the user, without re-accessing the server. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose a session-based communication protocol that allows a session to maintain previously

received responses and use these as the response to a new query by the user. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 9 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 10

Claim 10 depends from Claim 1 and further comprises that said client software stores a pre-defined string and automatically transmits it to the server as the client software is first accessed. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose a session-based communication protocol that allows a pre-defined string to be automatically transmitted to the server as the client software is first accessed. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 10 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 11

Claim 11 depends from Claim 1 and further comprises that server software stores the state of query and response of the client software, and restores the state of the client software after any interruption in said communication protocol. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose a session-based communication or session, which would be required to be able to store the state of query and response of the client software. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 11 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 12

Claim 12 depends from Claim 1 and further comprises that said client software adds a qualifier to the query that is passed to the content engine by the server, whereby the content engine can use said qualifier to execute the query and return appropriate results based on both the query string and its qualifier. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose the use of a session-based communication protocol that allows a sequence of character string queries to be sent from the client to a server during a session, which is a prerequisite to being able to add a qualifier to that query. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 12 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 13

Claim 13 depends from Claim 1 and further comprises that said client software identifies a user of the system to the server software whereby the server can store statistics and provides a history of queries and corresponding responses appropriate to said user. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose a session-based communication protocol that maintains a session between the client and the server, which is a prerequisite to the server storing statistics and providing a history of queries and corresponding responses appropriate to said user. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 13 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 14

Claim 14 depends from Claim 1 and further comprises that said server software is distributed within a server tier and a syndication tier, and wherein said client software communicates to the server tier on a single computer, and wherein each query is forwarded by the server tier to

an appropriate syndicate of content channels connected to the server tier on a different computer. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose the use of content channels. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 14 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 15

Claim 15 depends from Claim 1 and further comprises that said server software applies a content engine dependent pattern and filter to characters received from the client before queries are transmitted to the content engine. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose the use of a session-based communication protocol that allows a sequence of character string queries to be sent from the client to a server during a session, which is a prerequisite to being able to apply a content engine dependent pattern and filter to those characters. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 15 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 16

Claim 16 depends from Claim 1 and further comprises that the number of queries transmitted to the content engine is limited. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 16 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 17

Claim 17 depends from Claim 1 and further comprises that server responses comprise lists of strings, wherein each string is accompanied by corresponding metadata, whereby the metadata contains logical links to other data sources or Uniform Resource Identifiers. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. In particular, none of the cited references appear to disclose that server responses comprise lists of strings that are returned as a response to an extending query during an asynchronous session. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 17 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claim 18

Claim 18 depends from Claim 16 and further comprises that each string in the server response list is a link to another data source or a Uniform Resource Identifier. Applicant respectfully submits that this feature is neither anticipated by, nor obvious in view of the cited references. Reconsideration thereof is respectfully requested.

It is also respectfully submitted that Claim 18 is allowable as depending from an allowable independent claim and further in view of the comments provided above.

Claims 19-24

The comments provided above with respect to Claim 1 are incorporated herein by reference. Claims 19-24 have been similarly amended to more clearly define the invention as including a communication protocol that provides a session-based connection between a client system and a server system, and allows said client system to send a query string to query said server system for content, as part of a session; and that said server object records, during the session, each of said plurality of queries, and in response to receiving each single string character, matches the extending query string and returns increasingly appropriate content information to the client object as the query string is being extended.

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In view of the above-described amendments to Claims 19-24, and for similar reasons as given above with respect to Claim 1, Applicant respectfully submits that Claims 19-24 are similarly neither anticipated by, nor obvious in view of the cited references, and reconsideration thereof is respectfully requested.

Claims 25-27

Claims 25-27 are not addressed separately but it is respectfully submitted that these claims are allowable as depending from an allowable independent claim and further in view of the comments provided above. Applicant respectfully submits that Claims 25-27 are similarly neither anticipated by, nor obvious in view of the cited references, and reconsideration thereof is respectfully requested. It is also submitted that these claims also add their own limitations which render them patentable in their own right. Applicant reserves the right to argue these limitations should it become necessary in the future.

IV. Additional Amendments

Claims 28-29

Claims 28-29 have been newly added by the present Response. Applicant respectfully requests that new Claims 28-29 be included in the Application and considered therewith.

V. Conclusion

In view of the above amendments and remarks, it is respectfully submitted that all of the Claims now pending in the subject patent application should be allowable, and reconsideration thereof is respectfully requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

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Enclosed is a PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.136 for extending the time to respond up to and including April 21, 2005.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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